

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today  
(1) was not written for publication in a law journal and  
(2) is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte CHARLES E. WEITZEL  
and  
CARL SHURBOFF

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Appeal No. 96-1203  
Application 08/298,721<sup>1</sup>

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ON BRIEF

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Before THOMAS, JERRY SMITH and LEE, Administrative Patent Judges.  
JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134  
from the examiner's rejection of claims 1-12, which constitute  
all the claims remaining in the application. An amendment after

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<sup>1</sup> Application for patent filed August 31, 1994.

final rejection was filed on September 5, 1995 and was entered by the examiner. This amendment cancelled claims 13-16.

The disclosed invention pertains to a complementary heterojunction amplifier particularly designed for use as a radio frequency amplifier. The amplifier of the invention has a P-channel heterojunction transistor and an N-channel heterojunction transistor connected together. The gate width of the P-channel transistor is selected so that the P-channel transistor has the same transconductance as the N-channel transistor. The gate length of the N-channel transistor has a value so that the input impedance to the P-channel transistor is approximately equal to the input impedance of the N-channel transistor.

Representative claim 1 is reproduced as follows:

1. A complementary heterojunction amplifier comprising:

a P-channel heterojunction transistor having a first gate width, a first transconductance, and a first input impedance; and

an N-channel heterojunction transistor having a first gate length, a second transconductance, and a second input impedance wherein the first gate width has a value so that the first transconductance and the second transconductance are approximately equal and wherein the first gate length has a value so that the first input impedance is approximately equal to the second input impedance.

The examiner relies on the following reference:

Redfern

5,329,184

July 12, 1994

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Claims 1-12 stand rejected under 35 U.S.C. § 103. As evidence of obviousness the examiner offers Redfern taken alone.

Rather than repeat the arguments of appellants or the examiner, we make reference to the briefs and the answer for the respective details thereof.

#### OPINION

We have carefully considered the subject matter on appeal, the rejection advanced by the examiner and the evidence of obviousness relied upon by the examiner as support for the rejection. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellants' arguments set forth in the briefs along with the examiner's rationale in support of the rejection and arguments in rebuttal set forth in the examiner's answer.

It is our view, after consideration of the record before us, that the evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the obviousness of the invention as set forth in claims 1-12. Accordingly, we reverse.

Appellants have indicated that for purposes of this appeal the claims will all stand or fall together as a single group [brief, page 3]. Consistent with this indication

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appellants have made no separate arguments with respect to any of the claims on appeal. Accordingly, all the claims before us will stand or fall together. Note In re King, 801 F.2d 1324, 1325, 231 USPQ 136, 137 (Fed. Cir. 1986); In re Sernaker, 702 F.2d 989, 991, 217 USPQ 1, 3 (Fed. Cir. 1983). Therefore, we will only consider the rejection against independent claim 1 as representative of all the claims on appeal.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (CCPA 1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.,

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776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

With respect to representative, independent claim 1, the examiner cites Redfern as suggesting the use of CMOS circuitry for amplifiers and providing a motivation for equalizing the transconductance of the transistors [answer, page 3]. The examiner continues that the equalization of operating parameters in Redfern would inherently affect the gate widths and lengths of the transistors [Id.]. Finally, the examiner asserts that any engineer would have found it obvious to equalize other operating parameters such as input impedance [Id.].

Appellants argue that Redfern's equalization of transconductance in the P-channel and N-channel transistors of an inverter does not suggest the equalization of input impedances for such channel transistors of a heterojunction amplifier [brief, page 4]. Appellants also argue that the discovery that "increasing the gate length of transistor 11 [the N-channel

transistor] reduces the input impedance of transistor 11 with only a minor affect on the transconductance of transistor 11" was a discovery which would have been unexpected to the person of ordinary skill in the art [brief, page 6]. Finally, appellants argue that Redfern has no recognition of the problem of quiescent power dissipation so that Redfern provides no motivation to equate input impedances, especially by modifying the N-channel gate length as recited in the independent claims [brief, page 7].

Since the obviousness issue must be decided on the record before us, we are constrained to reverse the rejection as set forth by the examiner. We basically agree with all of appellants' arguments as set forth in the briefs. Redfern's suggestion to equate transconductance of the N-channel and P-channel transistors in an inverter cannot be said to suggest equating the input impedances of the N-channel and P-channel transistors of an amplifier. Although the examiner is correct in his assertion that any change in the dimensions of the transistor gates will have an effect on the transconductance and the impedance of a transistor, this general assertion does not suggest that input impedances of the N-channel and P-channel transistors should be made equal.

The form of claim 1 recites a complementary hetero-junction amplifier in which the P-channel transistor and the N-channel transistor have approximately equal transconductances and approximately equal input impedances. It would seem that any such amplifier having these equal transconductances and equal input impedances would necessarily have gate widths and lengths that satisfy the language of claim 1. A key feature, however, is that the input impedances of the N-channel and the P-channel transistors are approximately equal. As noted above, Redfern only teaches equating transconductances in the P-channel and N-channel transistors of an inverter.

The examiner's assertion that the invention of claim 1 would have resulted from an obvious design choice of parameters as suggested by Redfern simply is not supported by the evidence on this record. We are not inclined to dispense with the requirement that the examiner present factual support for contested positions on inherency or design choice. Since there is no suggestion that the input impedance between the N-channel and P-channel transistors should be made approximately equal, we do not sustain the rejection of representative claim 1. Since all the claims stand or fall together, we do not sustain the rejection of any of claims 1-12.

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The decision of the examiner rejecting claims 1-12 is  
reversed.

REVERSED

JAMES D. THOMAS	)	
Administrative Patent Judge	)	
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	)	
	)	
JERRY SMITH	)	BOARD OF PATENT
Administrative Patent Judge	)	APPEALS AND
	)	INTERFERENCES
	)	
	)	
JAMESON LEE	)	
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